KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

TE-4113

(Textile Testing and Quality Control-II)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

1(a)	Write down the methods of test of flammability with their features.	12
1(b)	List some chemical finishes which reduce the flammability of the treated fabrics and also state its characteristics.	06
1(c)	Describe a standard test method for flammability of apparel textiles with mentioning the i) Test is used for, ii) How this test works, iii) Sample preparation, and iv) Calculation and interpretation of results.	17
2(a)	Mention the different methods for estimation of mercerization.	04
2(b)	What is BAN? Mention its standard value.What precautions should be taken for dye bath for a particular fabric dyeing depending on the higher and lower value of BAN?	08
2(c)	Why size materials should be removed before dyeing? Describe a suitable test to show the presence of starch and/or PVA in fabric.	10
2(d)	How will you express the hardness of water?	04
2(e)	State the dye-house water quality.	09
3(a)	List the some compliance organizations.	04
3(b)	What is ASTM? Depict the garment categories according to ASTM.	10
3(c)	What is WRAP? State the WRAP certifications levels.	08
3(d)	What is Oeko-Tex-100^{+} ? Write down the different categories of Textiles as per Oeko-Tex-100.	08
3(e)	Write short notes on: i)GOTs, and ii) REACH	05
4(a)	Differentiate between water proof and shower proof fabric.	04
4(b)	Explain the fabric properties those have effects on air permeability.	10
4(c)	Discuss one of the widely accepted water permeability tests with necessary sketch.	12
4(d)	Mention the different methods of testing for water penetration and absorption measures.	04
4(e)	Write short notes on: i) Air porosity, and ii) Wetting time of a fabric.	05

SECTION-B

5(a)	Define tearing strength. Show an established tearing strength test method.	08
5(b)	What is color fastness? Describe a test of color fastness to light according to an established standard.	08
5(c)	Write short notes on: i) Different light sources of textile testing. ii) Multifiber fabric, iii) Blue wool, and iv) Gray scales.	12
5(d)	Show a comparison of ISO and AATCC test of color fastness to wash.	07
6(a)	Show a format of a lab report of color fastness to perspiration indicating the standard.	13
6(b)	Describe a hydrostatic head test with neat sketch of the tester.	12
6(c)	Depict the Bundesmann water repellency test with the assessment of the result.	10
7(a)	What is serviceability? Write down the advantages and disadvantages of both wearer trials and laboratory test.	14
7(b)	Describe abrasion resistance test with the evaluation procedure.	10
7(c)	Briefly explain the reasons and remedies of pilling.	05
7(d)	Briefly describe the factors affecting abrasion resistance.	06
8(a)	What is pilling? Describe a pilling test mentioning the evaluation procedure	09
8(b)	Define snagging. Show a snagging test with an established evaluation procedure.	10
8(c)	Discuss the procedure of carrying out a crease recovery test.	08
8(d)	Show a single rip tear test with neat sketch.	08

----END----

KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

TE-4133

(Technical Textiles)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

1(a)	What is Technical Textiles? How do technical textiles differ from conventional textiles?	10
1(b)	Classify medical textiles according to fiber used.	05
1(c)	What are the basic criteria of fibers that are used in medical textiles?	05
1(d)	Describe nonplantable, implantable and extracorporal devices with example which are used in medical textiles.	15
2(a)	Describe the basic construction of a tyre.	10
2(b)	Why nylon 6,6 is superior for making tyre?	10
2(c)	Show how a textile made airbag works and can save human lives from accidental injury.	10
2(d)	Draw the process flowchart of air bag manufacturing on textile perspective.	05
3(a)	Describe the raw materials used for geotextiles.	10
3(b)	What are geo-grids? Sketch and describe how geo-grids can help to improve the durability of roads.	10
3(c)	State the advantages of using Geo-textiles reinforcement application.	10
3(d)	How Geo-cells can help for controlling erosion?	05
4(a)	Define waterproof breathable fabric.	05
4(b)	Mention the uses of waterproof breathable fabric.	07
4(c)	Describe densely woven waterproof breathable fabric with neat sketch.	13
4(d)	What are the desirable attributes of waterproof breathable fabric for sportswear?	07
4(e)	What are the assessment techniques for waterproof breathable fabric?	03

SECTION-B

5(a)	What are the basic differences between coating and lamination?	05
5(b)	How 3D structure can be made by cold low pressure lamination?	07
5(c)	Briefly describe the transfer coating method.	13
5(d)	What are the common lamination faults in textile finishing?	10

6(a)	What is meant by smart textile? Write down the benefits of using smart textiles over conventional textiles.	10
6(b)	Write short note on 'Reflective technology in smart clothing'.	07
6(c)	Describe how a thermal performance enhancing fabric works.	13
6(d)	List out the names of the fibers used in smart material.	05
7(a)	Define protective clothing. What properties are required for 'Protech'?	12
7(b)	Mention the fibers name which are required for thermal protective clothing.	05
7(c)	Write short notes on:	18

i) Protective textiles against UV
ii) Extreme cold protective clothing
iii) Biological protective clothing

8(a)	Illustrate filtration process with neat sketch.	07
8(b)	What are the requirements of textile fiber as a filter media?	08
8(c)	Define separation membrane. State the mechanism and application of separation membrane.	12
8(d)	What are the applications of Reverse Osmosis Filtration in textile treatment? Why RO process is considered as one of the best filtration processes?	08

----END----

KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

TE-4109

(Fabric Structure and Design-II)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

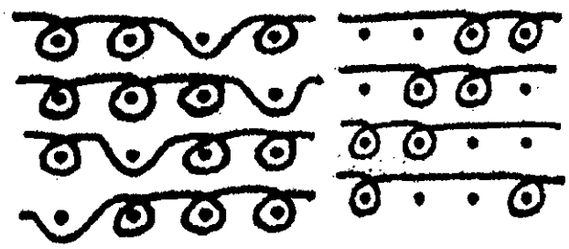
1(a)	Show the pattern chart for color and weave effects.	05
1(b)	Draw the Hound's tooth design having order of color 2:2 and weave type $\frac{1}{1}$ plain.	10
1(c)	Draw the weave plan of birds eye design having order of color 4:2.	10
1(d)	Write down the advantages and disadvantages of figuring with extra thread design.	10
2(a)	Make a list of comparison of extra warp with extra weft figuring.	05
2(b)	Write about different types of double cloths.	10
2(c)	Which points are to be considered before going to construct a double cloth?	10
2(d)	Draw the weave plan of a double cloth whose face weave is $\frac{4}{4}$ (Z) twill and back weave is $\frac{5}{3}$(Z) twill by using combined stitching method.	10
3(a)	Write the characteristics of leno fabrics.	10
3(b)	Describe the weft backed fabrics with a typical weft backed design.	10
3(c)	Draw the weave plan of weft wadded double cloth where face weave is 7-end Satin and back weave is 7-end Sateen. (Consider any type of stitching)	15
4(a)	Classify pile fabrics.	05
4(b)	State the standard quality parameters of All-over Velveteen.	10
4(c)	Show the typical design of a corded velveteen.	08
4(d)	Describe the pile formation process of 3-pick terry.	12

SECTION-B

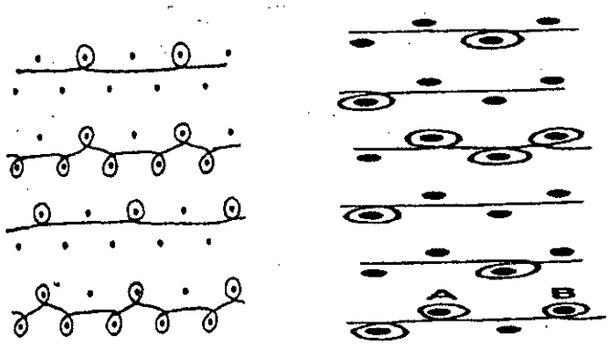
5(a)	Define selvage and mention it's functions.	08
5(b)	Write the advantages and disadvantages of different types of selvages.	12
5(c)	Suppose you are a R&D Manager of Square Group. You have received a swatch from Puma office. Describe the procedure to find out the design from given swatch.	15

6(a) Describe the following designs with proper cam arrangement and needle arrangement: 20

i) ii)



iii) iv)



6(b) Describe the following statement with figure - 10
"Number of truck is equal to types of wales".

6(c) Why Jacquard Knitting machines are used? 05

7(a) What are the differences between feeder stripe and auto stripe circular knitting machines? 10

7(b) Describe the basic concept of multi-feeder circular knitting machine. 10

7(c) Describe the following designs- 15

i) Single Rilief Design, and ii) Punto-di-Roma

8 To make Popcorn and half Milano rib fabric, 4 truck 28 inch dia. machine has been used. Then how would you calculate the followings? 35

i) No. of total needles.
ii) No. of 1st butt needles.
iii) No. of 2nd butt needles.
iv) No. of 3rd butt needles.
v) No. of 4yh butt needles.
vi) Total no. of cams.
vii) Total no. of knit cams.
viii) Total no. of miss cams.
ix) Total no. of tuck cams.
x) No. of total cam boxes.

KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

TE-4107

(Apparel Manufacturing Engineering-III)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

1(a)	Classify industrial garments washing. What are the advantages of industrial garments washing?	10
1(b)	List out the machines and equipment used in a garments washing plant.	05
1(c)	Sketch and label a horizontal garments washing machine.	08
1(d)	Describe Desize+Enzyme+Softener wash for 100 kg of twill white cargo short with standard process recipe.	10
2(a)	What is Ligne Number? If one shirt contains 08 pcs buttons of 18 L and 02 Pcs of 14 L, calculate the Ligne wise requirement of buttons in gross for manufacturing 50,000 pcs of shirts.	08
2(b)	Calculate the consumption per dozen of a ladies T-shirt. Consider fabric GSM = 160. Assume all other parameters and all parameters must be usual.	17
2(c)	What are the common methods to estimate thread consumption for any garments? Establish the mathematical expression to estimate thread consumption of stitch class - 301.	10
3(a)	Depict the complexities of perception of comfort by human being.	07
3(b)	Discuss Fashion and Fit as factors of clothing comfort.	10
3(c)	What is PMV? Why is it used? Mention the thermal comfort range suggested by researches using 7 point PMV scale.	08
3(d)	Write short notes on: i) Breathable fabrics ii) Thermal Manikins	10
4(a)	State the body heat balance equation. How thermoregulatory processes work in hot and cold atmospheres?	10
4(b)	Sketch and label the schematic view of a Shirley Togmeter.	08
4(c)	Why garments dyeing process is currently a trend in apparel industry?	05
4(d)	What are the advantages of garments dyeing over fabric dyeing? Describe garments dyeing procedure with reactive dyes.	12

SECTION-B

5(a)	What is 3D whisker? From where the idea of making whiskers being taken?	08
5(b)	Describe the stepwise process of hand scraping.	10
5(c)	State the process flowchart of PP spray with neutralization.	12
5(d)	Mention the demerits of resin application.	05
6(a)	Explain the inspection loop briefly.	05
6(b)	List out different types of apparel defects with proper example.	10
6(c)	What is AQL? Mention the importance of AQL in apparel industry.	10
6(d)	Describe the points required for a zipper inspection.	10
7(a)	Make a list of restricted substances in apparel.	05
7(b)	Discuss the standard test method to determine aromatic amines derived from azo colorants in polyester fibers.	13
7(c)	What components are considered as 'choking hazard' for children's apparel?	05
7(d)	State the test method used to determine the Lead content in garments.	12
8(a)	What is seam strength? Assume for a chain stitch, Stitch Per Inch (SPI) is 10, Single Thread Strength (STS) is 11 kg, calculate the seam strength.	12
8(b)	What preventive steps you can take to avoid 'Seam Slippage' or 'Fabric Rupture'?	08
8(c)	Depict the basic mechanism of laser engraving with neat sketch.	10
8(d)	Why ozone washing is called an 'Eco-friendly' wash?	05

----END----

KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

TE-4103

(Fabric Manufacturing Engineering-II)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

1(a)	Write the features of modern loom.	10
1(b)	How many types of weft replenishment and what are those?	05
1(c)	Briefly describe the working principle of 4x1 drop box motion.	15
1(d)	Differentiate between (2x1) drop box motion and (4x1) drop box motion.	05
2(a)	Classify costing.	07
2(b)	Describe the causes of production interruption.	10
2(c)	Which factors are involved in calculating the weavers load?	10
2(d)	What are the causes of warp and weft yarn breakage?	08
3(a)	Sketch the center weft fork mechanism mentioning its advantages and disadvantages.	10
3(b)	Describe the mechanism of electrical stop motion.	10
3(c)	Make a list of differences between fast-reed and loose-reed motion.	05
3(d)	A loom of 120 cm reed space at 220 picks/min with a shuttle mass 500 g and shuttle length is 30 cm. If the passage of shuttle fly occupies at 140°, then calculate i) Work done/pick and ii) Power for picking.	10
4(a)	Draw the mechanism of side sweep mechanical feeler.	06
4(b)	Mention the disadvantages of projectile loom.	04
4(c)	Differentiate between needle loom and multiple shuttle loom.	05
4(d)	Describe the working process of telescopic rapier driving system.	12
4(e)	How would you control uniform air jet pressure in air-jet weaving?	08

SECTION-B

5(a)	What types of special care should be taken during lycra single jersey knitting?	08
5(b)	Differentiate between 4 color finger box and 6 color finger box auto stripe machine.	11
5(c)	Write down the advantages and disadvantages of plain roller feed system.	07
5(d)	Mention six important knitted fabric faults with their causes and remedies.	09

6(a) Define fleece fabric. Describe different types of fleece fabric with notation, cam arrangement, and needle arrangement. 15

6(b) Point out the features of velour fabric. 05

6(c) Depict the production of fleecy on sinker top machine. 15

7(a) What is the difference between mechanical and electrical jacquard? 07

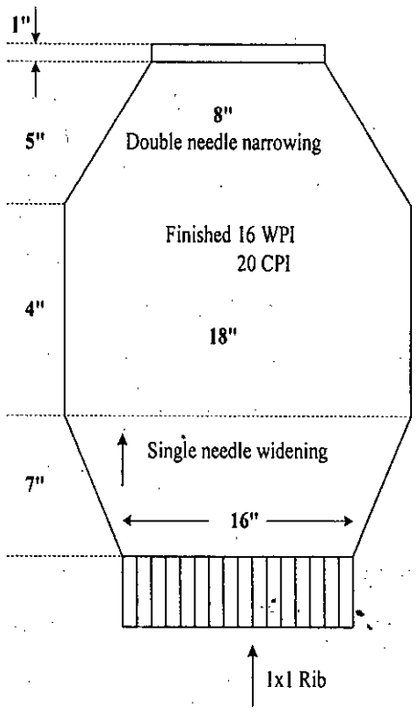
7(b) Describe the electrical jacquard knitting machine with neat sketch. 12

7(c) State the special properties of jacquard knit machine. 10

7(d) Why the RPM of jacquard machine is low? 06

8(a) Mention the properties of yarn that influence the production and quality of knit fabrics. 05

8(b) Calculate the fashioning frequencies of the following garment: 15



8(c) Design a pattern arrangement using the 4-color finger box from following colors. 15
Red- 20 course, Yellow- 20 course, Blue- 20 course, Pink- 20 course.
Consider the machine has 48 finger boxes.

----END----

KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

IPE-4121

(Industrial Management)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

1(a) Write down the differences between Management and Administration. Discuss the various functions that one should commonly expect to perform in running one's enterprise. 15

1(b) Discuss critically the basic components of scientific management as propounded by Taylor. How far it is relevant in Bangladeshi situation? 12

1(c) What is the meaning of span of management? Is there a numerical limit to the span of management? 08

2(a) Define business. Write down the differences between partnership business and co-operative business. 10

2(b) What is patent? Why do you think it is too much important to register patent by the name of business organization? 12

2(c) Discuss the merits and demerits of flat and tall organization structures. What kind of structure is more suitable for a company dealing with rapidly changing technology? Why? 13

3(a) What is forecasting error? Write down about the possible sources of forecasting errors. 10

3(b) Forecast based on averages. Given the following data: 15

Period	Number of complaints
1	60
2	65
3	55
4	58
5	64

Prepare a forecast using each of these approaches-

i) The appropriate naive approach

ii) A three-period moving average

iii) A weighted average using weights of 0.50 (most recent), 0.30 and 0.20

iv) Exponential smoothing with a smoothing constant 0.40

3(c) Write down the advantages and disadvantages of line-stuff organization. 10

4(a) What is management information system? Discuss the reliability of MIS for an organization as well as for users. 15

4(b) What are the basic principles of delegation of authority? Suggest practical guidelines for making delegation effective. 15

4(c) Define 'Chain of command'. How does 'chain of command' help the management to run the organization effectively? 10

SECTION-B

5(a) Define leader and leadership. Differentiate authoritarian and democratic leadership systems. 12

5(b) Define recruitment of employees. Briefly describe the sources of new employees. 13

5(c) What are the key motivational techniques? State Herberz two factor theories of motivation. 10

6(a) Define job evaluation and merit rating. Write down the differences between job evaluation and merit rating. 13

6(b) Differentiate between straight piece rate with guaranteed base wage and differential piece rate system with necessary figure. 12

6(c) Explain Bedaux plan with necessary figure. 10

7(a) What is meant by TQM? Write down the different aspects of quality. 07

7(b) Write notes on: 16

i) Stratification analysis

ii) Pareto analysis

7(c) Define 5S. What are the principles of 5S? - Explain. 12

8(a) Define ISO. 'ISO is a management standard not product or service standard'- Explain. 12

8(b) What is meant by ISO certification? Write down some ISO popular standard. 10

8(c) What is FBCCI and BKMEA? Write down the objectives and functions of FBCCI's. 13

----END----

KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

TE-4101

(Yarn Manufacturing Engineering-III)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

1(a)	What is Count Data System (CDS)? Mention the CDS for 80^s Ne count yarn (B/R to ring frame)	07
1(b)	A modern cotton spinning mill is going to spin 40^s count hosiery yarn. Write down the process parameters from Blow room to Ring frame for the yarn (Lap hank = 14 oz/yd; TPI = 18)	20
1(c)	Describe any suitable chute feed system which is available in the industries.	08
2(a)	Mention the technical specifications for the following machines: i) Carding ii) Comber iii) Ring frame	15
2(b)	Find out the production/shift in kg for the following machines: i) Blow room (2 scutchers) ii) Comber iii) Ring frame Assume all necessary parameters.	12
2(c)	Write short notes on: i) AFIS, and ii) Bale Management	08
3(a)	Describe the Recent Developments for the following machines: i) Carding, and ii)Ring frame	12
3(b)	Write down the name of autoconer machines with their country of origin.	04
3(c)	State the yarn cleaner setting of knitted and woven yarn in autoconer.	15
3(d)	What are the differences between Ring frame and doubling machine?	04
4(a)	Why cotton and polyester are blended in D/F?	05
4(b)	Define the term 'Mixing and Blending'. Write the merits of blending.	10
4(c)	Write down the process sequence of 50 Ne combed blended yarn mentioning the modern blowroom line of Rieter.	05
4(d)	Why lap preparation is necessary before combing? Also show the lap preparation process.	10
4(e)	What is NRE? Mention the waste% of different sections of spinning mill.	05

SECTION-B

5(a) Describe the process parameters for polyester- cotton blended yarn (Blow room to Ring frame) 25

5(b) Find out the cotton sliver hank for a blending ratio 65/35 polyester-cotton blended yarn; where- 05

No. of polyester sliver = 4

Polyester sliver hank = 0.15

No. of cotton sliver = 2

Percentage of cotton sliver = 35

Find the cotton sliver hank.

5(c) Mention the blending ratio for the following counts: 05

30^s, 40^s, 80^s, 45^s (Knit), and 60^s (Woven)

6(a) Make a list of the modern spinning systems for jute. 05

6(b) Write the advantages of modern jute spinning system. 05

6(c) Describe the closed loop WIRA autocount control system with mentioning its merits. 15

6(d) State the Recent Developments of the followings: 10

i) Jute Draw frame

ii) Jute spinning machine

7(a) Explain the working principle of draftomatic Draw frame for jute. And also mention its advantages. 15

7(b) Describe the Dust-Shaker-Fraser with neat sketch. 10

7(c) List the machines those are used for producing jute yarn from jute waste. 05

7(d) Find out the production/ shift in kg from the following data- 05

Flyer speed = 4000 rpm

TPI = 4.25; Jute yarn count = 300 Tex

Efficiency = 80%, Waste = 8%

No. of flyer/ frame = 100

No. of spinning frame = 20

8(a) Describe the different types of waste those are found in jute spinning and also mention their end uses. 15

8(b) Depict the working principle of Teaser Card with neat diagram. 12

8(c) F/C sliver weight = 13.5 lb 08

1^{st} D/F doubling and draft = 2 and 3.5

2^{nd} D/F doubling and draft = 4 and 6.5

3^{rd} D/F doubling and draft = 2 and 9

Spinning frame draft = 15.3; Find out the jute yarn count and also convert it in Ne.

----END----

KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 4th Year 1st Term Examination, 2017

TE-4105

(Wet Processing Engineering-III)

Time: 3 Hours Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION-A

1(a) What is pigment dyeing? 'Pigment dyeing and pigment printing on textile substrate are not same processes- Explain this statement with proper sketch. 07

1(b) Why pigment dyeing is necessary? Explain it. 06

1(c) Write short notes on- 06

i) Fluorescence

ii) Phosphorescence

1(d) Mention the process parameters (chemical and temperature) of reactive, disperse, and pigment fluorescent dyeing procedure. 06

1(e) Describe the fluorescent pigment dyeing process at stenter machine for textile substrate with curve. 10

2(a) Define the following terms of foam: 08

i) Blow ratio, ii) Drop escape time, and iii) Half-life period

Do you think above parameters are necessary for foam dyeing? If yes, explain your statement.

2(b) What types of solvent can be used in textile processing? Write down the advantages and disadvantages of solvent dyeing. 07

2(c) Write down the procedure of foam application on fabric by pressure nozzle with advantages and disadvantages. 10

2(d) What is supercritical fluid? Briefly describe the textile dyeing process by supercritical CO_2 with necessary sketch. 10

3(a) What is metal mordant? Describe the types of bond that are formed between natural dye and metal mordant? 07

3(b) What is the reason for changing the color in dye solution due to mixing some metallic mordant? Explain. 05

3(c) Write down the features of following mordants that can be used for natural dyeing: 06

i) Alum, ii) Ferrous sulphate, and iii) Stannous chloride

3(d) Although the natural dyes are eco-friendly, but there are some disadvantages of these dyes. Mention some examples. 05

3(e) What is air flow dyeing machine? Why does the factory authority want to set up air 12

flow dyeing machine instead of existing different water jet dyeing machines?- Explain the reason of using this machine with necessary sketch.

4(a) What is meant by effluent? What will be the characteristics of waste water to be discharged into the environment? 07

4(b) Write short notes on: 06

i) BOD, ii) COD, and iii) TDS

4(c) How does bacteria remove waste water in biological effluent treatment method? Explain with chemical reaction. 08

4(d) "Electro coagulation is the combination of an oxidation, flocculation, and flotation"- Explain this electro coagulation method of above three processes for treating the waste water with chemical reaction and necessary figure. 14

SECTION-B

5(a) Define the following terms: 08

i) Adsorption, ii) Exhaustion, iii) Absorption, and iii) Fixation

5(b) What is adsorption isotherm? Discuss different types of adsorption isotherms. 10

5(c) What is RFT in textile dyeing? How the RFT can be increased? 06

5(d) Discuss the factors which affect the dye-fiber interaction system. 11

6(a) Discuss the causes of common faults involved in dyeing. 08

6(b) Write down the reasons of dye aggregation in dye bath and preventive steps to control this. 12

6(c) Describe the Pore model and free volume model of dye diffusion in fibers with proper sketch. 15

7(a) Describe the physio-chemical process of dyeing. 10

7(b) What are the differences between auxiliary and chemical that is used in textile dyeing process? Mention the aspects of commercial textile chemicals that have to be considered before buying. 08

7(c) Discuss the controlling parameters of cotton fabric dyeing with reactive dye. 07

7(d) What is acquachron wash? Mention the controlling parameters involved in acquachron wash. 05

7(e) Write short notes on: 05

i) Dyeing kinetics, and ii) Dyeing equilibrium

8(a) What is thickener? Write down the required properties of thickener. 07

8(b)	Write down the procedure of screen preparation.	07
8(c)	What is print paste rheology? How the hydrodynamic pressure in print paste can be increased?	08
8(d)	Differentiate between flat and rotary screen printing.	05
8(e)	Write short notes on: i) Strike off ii) AOP iii) Blotch print iv) Poiseuille equation	08

----END----